REMARKS

This is in response to the office action mailed on December 28, 2005. The office action rejected Claims 1-6, 8-14 under 35 USC 101 as being directed to non-statutory subject matter. The office action rejected Claims 1-5, 9, 11 and 14 as anticipated by U.S. Pat. No. 6,381,605 ("Kothuri"). The Office Action rejected Claims 6 and 10 as obvious in view of the combination of Kothuri and U.S. Pat. No. 6,256,581 ("Fujii"), rejected Claims 12 and 13 as obvious in view of the combination of Kothuri and U.S. Pat. No. 5,930,474 ("Dunworth") and rejected Claim 8 as obvious in view of the combination of Kothuri and U.S. Pat. No. 5,499,366 ("Rosenberg").

Applicants have amended Claims 1, 2 and 9-14 to clarify the subject matter of the claimed invention and added new Claim 15. Applicants respectfully request reconsideration of the pending claims in view of the following remarks. Applicants submit that all of the pending claims in the present application are allowable, as explained below.

35 USC § 101

Claims 1-6, 8-14 were rejected under 35 USC §101 as being directed to non-statutory subject matter. Applicants have amended independent Claims 1, 2 and 14 to overcome the rejection that the claimed invention is directed to non-statutory subject matter. Accordingly, Applicants request that these rejections be withdrawn.

Independent Claim 1

Applicants' independent Claim 1 relates to an index for a geographic database that represents geographic features. Each of the geographic features has associated rank information. The rank information has at least two levels with a first level of rank being associated with the most important geographic features and a second level of rank being associated with geographic features of lesser importance. The index, recited in Claim 1, has a structure that includes three dimensions. A first dimension includes latitude boundary information, and a second dimension includes longitude boundary information. The data indexed by the structure are searchable using latitude and longitude. A third dimension of the index structure includes rank information, and the data indexed by the structure are searchable for the rank. Applicants' independent Claim 1

was rejected as being anticipated by Kothuri. Amended Claim 1 is not anticipated because Kothuri does not disclose all of the elements of this claim.

First, Applicants will briefly discuss the Kothuri patent which discloses a method for providing a hierarchical index of multidimensional data, such as geographic data. (*see*: Kothuri, column 3, lines 16-18). Kothuri discloses an R-tree structure consisting of a root node and any number of leaf nodes. (*see*: Kothuri, column 6, lines 55-59). In the R-tree structure of Kothuri that stores two-dimensional geographic data, a minimum bounding area (MBA) defines a two-dimensional shape (rectangle) enclosing a bounding area. (*see*: Kothuri, column 7, lines 19-24). Figure 1 of Kothuri depicts areas of a geographical map and a representative R-tree that may be used to index the data representing the features on the map. The index comprises a root node with MBA B1 defined to include data 112 and 114 and MBA B2 defined to include data 122 and 124. (*see*: Kothuri, column 8, lines 1-11).

Applicants would like to point out that the Kothuri index for multidimensional data is similar to the prior art index for geographic data disclosed in the Background of the present application. The prior art index disclosed in the Background of the present application includes root node and intermediate nodes that include boundary information. The indexed data can be a collection of data items that represent the geographic features encompassed within a bounded area. (*see*: Specification, Figure 1, page 1, lines 15-25).

Additionally, Applicants would like to further point out that Kothuri discloses providing separate indexes for different hierarchy of selectivities or granularities:

> Within a particular data dimension or attribute, a hierarchy of selectivities or granualarities may be specified. In various embodiments of the invention, one or more indexes may be constructed and stored in a database for a set of data items by choosing different selectivities for one or more dimensions or attributes. For example, a region dimension of sales data may include values for both city and state. A first index may then be constructed on the basis of city-level selectivity in the region dimension and, for example, a year selectivity in a time dimension. Another index may be constructed using state and year selectivities. (*see*: Kothuri, column 6, lines 11-21).

> Multiple indexes can be constructed by choosing different selectivity values for a dimension or attribute hierarchy. For example, one index may be constructed to cluster on year and city granularities/selectivities (e.g., for time and region dimensions) as in an earlier example. Another index may be constructed using year and state granularities. The number of possible index structures increases as the hierarchy (e.g., number of tiers) in each dimension or attribute increases. Thus, if a county attribute is added to the region dimension then query patterns could be designed accordingly, which may affect the number of query retrieval units and the manner in which the dataset is divided. As one skilled in the art will appreciate, multiple indexes are useful in parallel evaluation of expensive OLAP (OnLine Analytical Processing) operations, such as CUBE in warehousing applications. (*see*: Kothuri, column 14, lines 18-33).

Thus, Kothuri clearly states that separate indexes are generated for different selectivities or granularities, such as one index for a city-year granularity and another separate index for a state-year granularity.

Again the disclosure of Kothuri is similar to the Background of the present invention. Like Kothuri, the Background description of the prior art also discloses providing separate indexes for different hierarchy of selectivities or granularities. As illustrated in the prior art example of Figure 1 of the present application, three separate indexes are used for the three layers that include data that represent geographic features having the three different associated ranks. Each separate layer includes its own separate index. Additionally, because each lower layer includes all the items of data represented in all higher layers, many items of data that represent the same feature are physically stored more than once. For example, Figure 1 shows the items of data in the box labeled with an "x" that appear three times. (*see*: Specification, Figure 1, page 3, lines 8-17).

The Applicants' invention recited in Claim 1 includes an index structure with a third dimension that includes rank information. Because the rank information is incorporated into the index, there is no need to provide separate indexes for the different hierarchy of selectivities or granularities. Accordingly, a data item which is stored three times in the prior art embodiment of Figure 1 (as shown by the three "x"s) can be stored once in the embodiment recited in Claim 1 as shown in Figure 2 (as shown with the one "x"). (*see*: Specification, Figures 1 & 2, page 6, lines 1-3). Thus, the Applicants' index, recited in Claim 1, provides significant advantages over the prior art.

Applicants will address the positions on pages 4-5 of the Office Action relating to the claim element that recites "a third dimension of said three dimensions includes rank information . . . , said data that represent geographic features indexed by said structure are searchable for said rank of the geographic features."

The Office Action indicated that Kothuri teaches a third dimension includes rank information at column 13, line 16 to column 14, line 54 emphasizing column 13, line 43 "sort the data items in the selected dimensions." Applicants respectfully point out that Kothuri does not disclose the third dimension including rank information. These sections of Kothuri illustrate an algorithm for constructing the nodes of the tree index. As indicated above, Kothuri clearly states that separate indexes are generated for different selectivities or granularities, such as one index

for a city-year granularity and another separate index for a state-year granularity. (*see*: Kothuri, column 6, lines 11-21; column 14, lines 18-33). Kothuri does not include rank information in the index structure; rather Kothuri would generate separate indexes for different ranks.

The Office Action indicated that Kothuri teaches the claim element "said data that represent geographic features indexed by said structure are searchable for said rank of the geographic features" at column 14, lines 34-54. Applicants respectfully point out that these sections of Kothuri do not disclose the third dimension including rank information and the data that represent geographic features indexed by said structure are searchable for said rank of the geographic features. These sections of Kothuri merely discloses that the multidimensional index may store data derived from data elements, such as sales data may include a searchable attribute of profit data derived from sales data attributes. The portion of a sentence emphasized by the Office Action "such as in a WHERE clause of a SELECT statement in SQL" merely is an example of a search query. Furthermore, the next section merely indicates possible searchable attributes for the index, such as sales, profits, state, city, year, and product. These searchable attributes may be used for the index, but Kothuri discloses separate indexes for different selectivity values or attribute hierarchy, for example one index for year-city granularity and another for year-state granularity. (*see*: Kothuri, column 14, lines 18-23).

The Office Action also cited column 18, line 45 to column 19, line 28 as disclosing the claim element of the data that represent geographic features indexed by the structure are searchable for the rank of the geographic features. Applicants respectfully point out that Kothuri merely discloses in the above sections a query window search of the multidimensional index. The query window identifies the nodes/subtrees whose MBAs enclose/intersect the query window. Although Kothuri discloses searching the multidimensional index, Kothuri does not disclose searching the multidimensional index for rank information. As stated above, Kothuri fails to disclose including rank information within the structure of the multidimensional index. In contrast, Kothuri specifically teaches that separate indexes be used for different selectivity values or attribute hierarchy, for example one index for year-city granularity and another for year-state granularity. (*see*: Kothuri, column 14, lines 18-23). Because Kothuri does not disclose rank information in the structure of the index, Kothuri also does not disclose that the data that represent geographic features indexed by the structure are searchable for the rank.

The Office Action also cite column 20, lines 31-67 as disclosing the claim element of the data that represent geographic features indexed by the structure are searchable for the rank of the geographic features. Applicants respectfully point out that Kothuri merely discloses in the above sections a query search of the multidimensional index. The query identifies the nodes/subtrees whose MBAs enclose/intersect the query window. Although Kothuri discloses searching the multidimensional index, Kothuri does not disclose searching the multidimensional index for rank information. As stated above, Kothuri fails to disclose including rank information within the structure of the multidimensional index. In contrast, Kothuri specifically teaches that separate indexes be used for different selectivity values or attribute hierarchy, for example one index for year-city granularity and another for year-state granularity. (*see*: Kothuri, column 14, lines 18-23). Because Kothuri does not disclose rank information in the structure of the index, Kothuri also does not disclose that the data that represent geographic features indexed by the structure are searchable for the rank.

For at least the above reasons, Applicants' independent Claim 1 is not anticipated by Kothuri.

Independent Claim 2

Applicants' independent Claim 2 was rejected as being anticipated by Kothuri. Applicants submit that Kothuri does not anticipate amended Claim 2 for some of the similar reasons as discussed above in conjunction with Claim 1. Specifically, Claim 2 recites an index for a geographic database whereby the geographic data indexed by the structure are searchable for a non-spatial property of the indexed geographic data that represent the geographic features using the third dimension. The non-spatial property of the geographic data includes at least one of: a rank associated with the geographic features represented by the geographic data, a granularity of said indexed geographic data, and a scale associated with said indexed geographic data. As indicated above, Kothuri clearly states that separate indexes are generated for different selectivities or granularities, such as one index for a city-year granularity and another separate index for a state-year granularity. (*see*: Kothuri, column 6, lines 11-21; column 14, lines 18-33). Kothuri does not include rank, granularity or scale information in the index structure, rather Kothuri teaches separate indexes for different ranks, granularities or scales.

Because Kothuri fails to disclose or suggest every claim element, Kothuri does not anticipate Applicants' independent Claim 2.

Independent Claim 14

Applicants' independent Claim 14 was rejected as being anticipated by Kothuri. Applicants submit that Claim 14 is anticipated by Kothuri for similar reasons as discussed above in conjunction with Claim 1. Claim 14 recites an index with a structure that includes a first dimension, a second dimension and a third dimension, the data indexed by the structure are searchable using latitude and longitude, and a selectivity of the indexed data is searchable using the third dimension. Kothuri clearly states that separate indexes are generated for different selectivities. (*see*: Kothuri, column 6, lines 11-21; column 14, lines 18-33). Kothuri does not include selectivity information in the index structure; rather Kothuri teaches separate indexes for different selectivities.

Because Kothuri fails to disclose or suggest every claim element, Kothuri does not anticipate Applicants' independent Claim 14.

Dependent Claims 3-6, 8-13 and 15

Applicants' Claims 3-6, 8-13 and 15 are dependent claims that distinguish the cited references at least for the same reasons explained above in connection with their independent base claims. In addition, these claims recite further features and limitations that are neither disclosed nor suggested by these references.

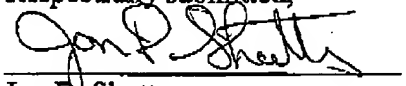
Petition for extension of time

Included with this response is a request for an extension of time to reply to the office action dated December 28, 2005. Included with this response is an authorization for payment of the fee associated with this request.

Conclusion

All the issues in the office action, dated December 28, 2005 have been addressed. Favorable consideration of the present application is requested. If any issues remain, the Examiner is invited to call the undersigned.

Respectfully submitted,



Jon D. Shutter
Reg. No. 41,311
Patent Counsel

NAVTEQ North America, LLC
222 Merchandise Mart Plaza, Suite 900
Chicago, IL 60654
(312) 894-7000 x7365